REMARKS

I. Status of the Claims

Claims 16-18 remain pending. For reasons discussed below, these claims are allowable.

II. The Claims Are Novel Under 35 U.S.C. § 102(b)

Claims 16-18 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Burshtyn et al. (*J. Immunol.* **151**: 3070-3080, 1993). Applicants traverse the rejection.

The Office Action cites the Burshtyn et al. reference as teaching a substrate for capturing antigens. The Burshtyn et al. reference discloses that the MHC Class I molecules are isolated by immunoisolation from RMA and RMA-S mammalian cell lines. See Burshtyn et al., p. 3071, col. 1, paragraph 2, and col. 2, paragraph 3. By contrast, the presently claimed substrate comprises a support having on its surface a population of purified immobilized empty MHC Class I molecules, where the MHC Class I molecules are K^{bm3} or L^{D} molecules expressed from a recombinant *Drosophila* cell and are capable of binding one or more antigens, and where the substrate is not a lipid bilayer. Regarding the difference in the source of expressed MCH Class I molecules, the Examiner asserted that, absent a showing that there is a physical difference, empty human MHC Class I complexes expressed in and purified from recombinant *Drosophila* cells and empty human MHC Class I complexes expressed in and purified from mammalian cell lines are viewed as being the same.

Contrary to the Examiner's rejection, a substrate for capturing antigens comprising a population of MHC Class I molecules expressed from a recombinant *Drosophila* cell would be different from the substrate of Burshtyn et al., which employs MHC Class I molecules produced from mammalian cells. As evidence of the difference, an article by Chang et al., entitled "Enhanced activity of recombinant β-secretase from *Drosophila melanogaster* S2 cells transformed with cDNAs encoding human β1,4-galactosyltransferase and Gal β1,4-GlcNAc α2,6-sialyltransferase", *Journal of Biotechnology* **116:** 359-367, 2005 is attached as Exhibit A. The Chang et al. article observes that glycoproteins produced in insect cells, in particular, *Drosophila* cells, lack sialic acid in the glycosylated portion of the protein as

compared to glycoproteins produced in mammalian cells. See for example, page 363, second column, lines 2 to 23. See also, Chang et al., paragraph bridging pages 364 to 365, and Figure 4.

That the claimed invention provides MHC Class I molecules with different characteristics compared to the mouse MHC Class I molecules of Burshtyn et al. is further supported by an article by Boog et al., entitled "Specific immune responses restored by alteration in carbohydrate chains of surface molecules on antigen presenting cells," *Eur. J. Immunol.* **19:** 537-542, 1989 (Exhibit B). This article states that "MHC expression on DC is both quantitatively superior and qualitatively distinct from that on other APC types. The qualitative difference lies in the presence of fewer sialic acids on MHC molecules on DC than on the other tested APC. . . . This lower degree of sialylation may contribute to the superior antigen-presenting function of DC, since NANAse treatment of nonresponder types of APC restores specific failure of T cells to respond to nominal antigen or alloantigen." Boog et al., paragraph bridging pages 539 and 540; see also Figure 2.

An article by Marchal et al., entitled "Glycoproteins from Insect Cells: Sialylated or Not?", *Biol. Chem.* **382**: 151-159, 2001 (Exhibit C), further reflects that MHC Class I molecules expressed from a *Drosophila* cell do not necessarily have the same characteristics as MHC Class I molecules expressed from mammals. This article observes that glycoproteins produced in insect cells lack sialic acid in the glycosylated portion of the protein as compared to glycoproteins produced in mammalian cells. See, for example, Marchal et al., page 151, second column, lines 8 to 15. The Marchal et al. article further notes, whether referring to endogenous proteins or recombinant proteins produced in insect cells, that insect cells generally do not produce sialylated glycoproteins. See Marchal et al., page 157, sentence bridging first and second columns.

The Chang et al., Boog et al., and Marchal et al. articles cited herein provide evidence that a support having on its surface a population of purified immobilized empty MHC Class I molecules, where the MHC Class I molecules are K^{bm3} or L^{D} molecules expressed from a recombinant *Drosophila* cell, would be structurally differentfrom the Burshtyn et al. substrate.

Since the Burshtyn et al. reference fails to disclose a substrate comprising a support having on its surface a population of purified immobilized empty MHC Class I molecules, where the MHC Class I molecules are K^{bm3} or L^D molecules expressed from a recombinant *Drosophila* cell or are molecules that are inherently the same, the Section 102 rejection is in error and should be withdrawn.

III. The Claims Are Patentable Under 35 U.S.C. § 103(a)

The rejection of claims 16-18 under 35 U.S.C. § 103(a) as allegedly being obvious from Burshtyn et al. in view of Nikolic-Zugic et al. (*Eur. J. Immunol.* **20:** 2431-2437, 1990) is also in error.

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation to modify the reference or to combine the reference teachings so as to arrive at the claimed invention and there must be a reasonable expectation of success for achieving the claimed invention as a whole. See *In re Vaeck*, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Here, a proper *prima facie* case of obviousness has not been set forth.

As noted above, the Office Action cites the Burshtyn et al. reference as teaching a substrate for capturing antigens. The Burshtyn et al. reference utilizes a source of MHC Class I molecules that are purified by immunoisolation from mammalian RMA and RMA-S cells. The Burshtyn et al. reference, however, does not teach or suggest MHC Class I molecules expressed in and purified from recombinant *Drosophila* cells. As discussed above as supported by the accompanying articles by Chang et al., Boog et al., and Marchal et al., a support having on its surface a population of purified immobilized empty MHC Class I molecules that are K^{bm3} or L^D molecules expressed from a recombinant *Drosophila* cell would be distinct from a support having on its surface a population of mouse MHC Class I molecules as disclosed by the Burshtyn et al. reference.

The Burshtyn et al. reference fails to suggest replacing the disclosed MHC Class I molecules with K^{bm3} or L^D molecules expressed from a recombinant *Drosophila* cell. The Nikolic-Zugic et al. reference does not cure the deficiencies of the primary reference.

The Nikolic-Zugic et al. reference was cited as teaching the use of K^{bm3} MHC Class I molecule-expressing APCs for presentation to T cells. But the secondary reference, like the

primary reference, merely discloses the use of mammalian cells to produce the MHC Class I molecules. Accordingly, the combined disclosures of the Burshtyn et al. reference and the Nikolic-Zugic et al. reference fail to teach or suggest using a substrate comprising a population of purified immobilized empty MHC Class I molecules expressed from a recombinant *Drosophila* cell as in independent claim 16. For this reason alone, claims 16-18 patentably define over the prior art.

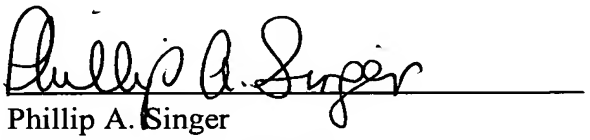
The dependent claims recite further patentably distinguishing features. For example, the combination of the Burshtyn et al. reference and the Nikolic-Zugic et al. reference lack any teaching or suggestion wherein the substrate is a bead as in claim 17, or the antigens are peptides as in claim 18. Applicants therefore request that the rejection of claims 16-18 under 35 U.S.C. § 103(a) be withdrawn.

IV. Conclusion

In view of the foregoing, the application is now in condition for allowance. The prompt issuance of a formal Notice of Allowance is therefore requested.

If the Examiner believes a telephone conference would expedite allowance of this application, please telephone the undersigned at 206-332-1380.

Date: October 6, 2005



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